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TAXONOMIC NOTES ON THE NEW WORLD FORMS OF *TROGLODYTES*

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While preparing a list of the Troglodytidae, for the continuation of the "Check-list of Birds of the World," it became evident that my taxonomic treatment of the family diverged in a number of respects from the classification employed by Hellmayr (1934), the current standard reference to the New World wrens. It seems advisable, therefore, to present, in more detail than possible in the Check-list, the reasons which have instigated these changes. This paper will be concerned with the New World forms of *Troglodytes*.

I am greatly indebted to Dr. Dean Amadon of the American Museum of Natural History and to Dr. Herbert Friedmann of the United States National Museum for loaning me specimens under their care, and to Dr. Ira N. Gabrielson for very generously allowing me to borrow critical specimens from his private collection.

TROGLODYTES TROGLODYTES

It has been nearly 40 years since the New World forms of *Troglodytes troglodytes* were last revised. At that time, Oberholser (1919) recognized nine races, three of which he described in the course of his study. Four races have been designated subsequently. After examining nearly 450 specimens of the species from North America, I find that I cannot recognize five of the 13 races proposed. A synopsis of the races is presented below.

One of the puzzling features exposed in this review is that the number of male specimens outnumbers that of females by

almost two to one. An unbalanced sex ratio does not seem to occur in the wild, at least in the European races (Armstrong, 1955). I suspect that collecting bias is involved in the museum material, perhaps caused by the greater ease with which the vociferous males may be found. Bias created by careless sexing of specimens is also a strong possibility and suggested by the fact that the non-breeding specimens display a greater disparity in the sex ratio than birds taken during the nesting season. Were accurately sexed material available, sexual dimorphism in size might be more pronounced than now evident and some of the apparent interracial overlap in size might be diminished.

TROGLODYTES TROGLODYTES HIEMALIS Vieillot

Troglodytes hiemalis Vieillot, 1819, Nouv. Diet. d'Hist. Nat., nouv. ed.,

34, p. 514 — Nova Scotia and New York; restricted to Nova Scotia by Oberholser, 1902, Auk, 19, p. 178.

Troglodytes troglodytes aquilonaris Burleigh and Peters, 1948, Proc. Biol. Soc. Washington, 61, p. 116 — Tompkins, Newfoundland.

T. t. hiemalis is the lightest colored of the continental forms. The Newfoundland population was named *aquilonaris* and was described as differing from *hiemalis* in being darker and less rufescent dorsally, and paler and more heavily squamated ventrally — characters which are notoriously variable throughout the species. A series of 36 specimens from Newfoundland, including part of the type series, has been examined. Some birds possess the characters ascribed to the race, but these individuals fall well within the range of variability of *hiemalis* and occur with the same frequency. *T. t. aquilonaris* is considered to be untenable.

The race breeds from the southern part of the District of Mackenzie and southern Newfoundland south to Pennsylvania, Minnesota, and Alberta. It winters in the southeastern half of the United States.

TROGLODYTES TROGLODYTES PULLUS (Burleigh)

Nannus hiemalis pullus Burleigh, 1935, Proc. Biol. Soc. Washington, 48, p. 61 — Mount Mitchell (alt. 6,500 ft.), North Carolina.

This race, which breeds in the Appalachians, is barely distinguishable from *hiemalis*, but a series of 13 breeding specimens from Tennessee, Virginia, and North Carolina shows that

TABLE 1
Comparative Measurements (in mm.) of Adult *T. troglodytes*

Race		Wing (flat)			Tail			Culmen (base)			Remarks			
		M.	σ_m	Range.	No.	M	σ_m	Range.	No.	M		σ_m	Range.	No.
<i>hiemalis</i>	♂	49.30	.16	45.5—52.0	65	30.16	.15	27.0—33.5	71	14.27	.07	13.0—15.5	70	Eastern N. Amer.
"	♀	46.57	.28	44.0—50.0	30	29.03	.29	25.5—32.5	30	13.67	.13	12.0—15.0	29	" "
<i>pallus</i>	♂	49.94	.56	48.0—52.0	8	30.31	.42	29.0—32.0	8	14.00	.57	12.5—15.0	8	Va., Tenn., N. C.
"	♀	45.30	.32	44.0—46.0	5	27.66	.28	26.5—28.0	4	14.00		14.0	3	" "
<i>pacifcus</i>	♂	47.38	.16	44.0—51.0	78	29.96	.18	25.5—33.0	74	14.24	.07	13.0—16.0	74	Western N. Amer.
"	♀	45.58	.23	42.5—48.0	42	28.82	.25	26.0—32.0	40	14.14	.08	13.0—15.0	40	" "
<i>helleri</i>	♂	48.50	.28	47.0—49.0	6	30.10	.40	29.0—31.0	5	15.12	.03	15.0—15.5	4	Kodiak and Afognak Ids.
"	♀	46.25	—	46.0—46.5	2	29.50	—	29.0—30.0	2	14.25	—	14.0—14.5	2	Kodiak Id.
<i>semidiensis</i>	♂	53.33	.19	53.0—54.0	3	35.25	—	34.5—36.0	3	19.66	.19	19.0—20.0	3	Chowiet and N. Semidi Ids.
"	♀	48.62	1.11	46.5—50.0	4	30.50	1.30	29.0—32.0	3	17.75	.25	17.0—18.0	4	Chowiet Id.
<i>kiskensis</i> (pt.)	♂	53.50	—	52.0—55.0	2	32.0	—	32.0	2	17.50	.14	17.0—18.0	3	Amak and Amagat Ids.
"	♀	—	—	51.0	1	—	—	31.0	1	—	—	17.5	1	(<i>"stevensoni"</i>)
"	♂	53.15	.24	52.0—55.0	10	33.25	.70	31.0—35.0	8	18.16	.14	17.0—19.0	9	Fox Ids.
"	♀	51.00	.45	50.0—52.0	5	32.30	.29	31.0—33.0	5	17.00	1.00	15.0—18.0	4	(<i>"petrophilus"</i>)
"	♂	52.75	—	51.5—54.0	2	—	—	33.0	1	19.00	—	19.0	2	(<i>"petrophilus"</i>)
"	♀	49.10	.24	48.0—50.0	5	29.87	1.03	28.0—31.0	4	18.30	.09	18.0—19.0	5	Yunaska and Carlsale Ids.
"	♂	54.19	.37	52.5—55.5	8	32.50	1.14	30.0—33.5	6	19.05	.22	18.0—20.0	9	(<i>"seguamensis"</i>)
"	♀	50.60	1.64	49.5—54.0	5	31.80	1.04	29.5—33.0	5	18.60	.08	18.0—19.0	5	Andeanof Ids.
"	♂	53.21	.40	51.5—54.5	7	33.00	.25	31.5—34.0	7	18.75	.23	18.0—20.5	10	(<i>"tanagensis"</i>)
"	♀	50.06	.36	49.0—51.5	8	30.20	1.15	27.5—31.5	5	18.31	.09	17.5—19.0	8	Buldir and Rat Ids.
"	(all)	53.45	.20	51.5—55.1	29	32.87	.25	30.0—35.0	24	18.57	.14	17.0—20.5	33	" "
"	♀	50.21	.26	48.0—54.0	24	31.07	.34	27.5—33.0	20	18.11	.17	15.0—19.0	23	Aleutians west to Buldir Id.
<i>neligerus</i>	♂	55.50	.72	53.5—57.0	5	35.30	.65	34.0—36.5	5	18.62	.28	18.0—19.5	4	Aleutians west to Buldir Id.
"	♀	—	—	53.0	1	—	—	33.5	1	—	—	19.0	1	Attu Id.
<i>alasensis</i>	♂	—	—	55.0	1	—	—	37.0	1	—	—	17.5	1	" "
"	♀	52.17	.62	51.0—53.0	3	32.83	.62	32.0—34.0	3	17.50	.14	17.0—18.0	3	St. George Id.

dorsally it is, almost constantly, slightly darker than birds of the northern race collected in the same season. A shorter wing and smaller bill were also attributed to *pullus*. However, 21 adult males collected between late May and early August in Newfoundland, New Brunswick, Quebec, Alberta, Maine, New Hampshire, New York, and Michigan had a mean wing length of $49.38 \pm .28$ mm., and 20 of the same series had a mean culmen length of $14.25 \pm .15$ mm., dimensions which do not differ significantly from those of breeding males from the Appalachians (Table 1).

The race breeds in the mountains from Virginia to Georgia. It is absent from its breeding grounds during the winter and presumably mingles with *hiemalis* in the southeastern United States. Differentiation of the two races in the winter is uncertain. The post-nuptial plumage of the species is considerably darker than the breeding plumage and although one might assume that in this dress *pullus* remains slightly darker than *hiemalis*, there is no evidence that this is true.

TROGLODYTES TROGLODYTES PACIFICUS Baird

Troglodytes hiemalis var. *pacificus* Baird, 1864, Rev. Amer. Birds, 1, (1864-1873), p. 145 — Simiahmoo, Puget Sound, Washington.

The western continental race is much more richly colored throughout than *hiemalis* and *pullus* and somewhat more frequently lacks dorsal barring. Ridgway (1904) stated that the bill of *pacificus* is more slender and less curved, but I cannot confirm this. The mean wing length of males of *pacificus* is substantially shorter than that of the males of the eastern races (Table 1), although the overlap in measurements is almost complete, rendering the character of little taxonomic value. Females of *pacificus* also have shorter wings than their eastern counterparts, but the difference is less pronounced than in the males.

The breeding range is from southeastern Alaska and the southern Yukon southward through the mountains to Idaho and central California. In the winter the race moves to lower elevations and occurs casually south to Arizona and New Mexico.

TROGLODYTES TROGLODYTES HELLERI (Osgood)

Anorthura hiemalis helleri Osgood, 1901, *Ank.* **18**, p. 181 — English Bay, Kodiak Island, Alaska.

Kodiak and Afognak Islands are occupied by a nonmigratory race which is most similar to *pacificus*, but distinguished by its less rich coloration, reduced abdominal vermiculations, and slightly larger average size.

TROGLODYTES TROGLODYTES SEMIDIENSIS (Brooks)

Nannus hiemalis semidiensis Brooks, 1915, *Bull. Mus. Comp. Zool.*, **59**, p. 400 — Chowiet Island, Semidi Islands, Alaska.

It is with reluctance that this form is accepted. It appears to be distinguished from *kiskensis* only by the greater average length of the bill of the males ($19.66 \pm .19$ mm. *vs.* $18.57 \pm .14$ mm.; $0.05 > P > 0.02$). However, there are only three males in the sample from the Semidi Islands, and their bill measurements (19.0, 20.0 and 20.0 mm.) fall within the upper range of males of *kiskensis* (17.0 to 20.5 mm.). Under many conditions one might ascribe the observed difference to chance and with little hesitancy consider the two populations unworthy of separate designation. However, it is obvious that the birds are markedly different from *helleri* of the Kodiak region, which is about 100 miles away, and resemble the Aleutian form, from which they are isolated by roughly 400 miles. The extent of isolation makes it appear probable that the observed differences are indicative of two populations which are morphologically distinct. It is for this reason that it seems best to accept the data at face value and maintain *semidiensis*.

Specimens have been taken on Chowiet, Agihyuk, and North Semidi Islands.

TROGLODYTES TROGLODYTES KISKENSIS (Oberholser)

Nannus troglodytes kiskensis Oberholser, 1919, *Proc. U.S. Nat. Mus.*, **55**, p. 228 — Kiska Harbor, Kiska Island, Aleutian Islands, Alaska.

Nannus troglodytes tanagensis Oberholser, 1919, *Proc. U.S. Nat. Mus.*, **55**, p. 230 — Tanaga Bay, Tanaga Island, Aleutian Islands, Alaska.

Nannus troglodytes petrophilus Oberholser, 1919, *Proc. U.S. Nat. Mus.*, **55**, p. 232 — Unalaska, Unalaska Island, Aleutian Islands, Alaska.

Nannus troglodytes stevensoni Oberholser, 1930, Proc. Biol. Soc. Washington, **43**, p. 151 — Amak Island, Alaska.

Troglodytes troglodytes seguamensis Gabrielson and Lincoln, 1951, Proc. Biol. Soc. Washington, **64**, p. 73 — Seguam Island, Aleutian Islands, Alaska.

The wrens of the Aleutian Islands present a number of problems, the most difficult of which is the condition of the available specimens. Almost all collecting has been done during the late spring and the summer, when the birds are in their most worn plumage, or are immature. Of 110 Aleutian specimens examined, only 15 were taken between the months of October and April. The condition of wear is frequently variable; even birds from the same island, collected on the same day, may exhibit marked differences. The poor condition of the specimens seems to have been the main reason for the description of six races from the region, although only two stand up under critical examination.

On the basis of five adult males and ten young birds, the population of Amak and Amagat Islands was named "*stevensoni*." It was defined as differing from "*petrophilus*," of the Fox Islands, in being more gray in both adult and juvenal plumages, in having fewer vermiculations below in adult plumage, and in having a slightly shorter bill in the adult. I cannot appreciate any of the supposed color characters. The difference between the mean length of the bills of three males from Amak and Amagat Islands ($17.50 \pm .14$ mm.) and that of nine males from the Fox Islands ($18.16 \pm .14$ mm.) is without question insignificant. ($P > .10$).

In the original description, "*petrophilus*" was compared with *alascensis*, of the Pribilofs, even though the describer (Oberholser, 1919) admitted that his new race was nearest to "*tanagensis*," a form from the Andrean Islands which he described in the same paper. The race "*petrophilus*" was then casually mentioned as differing from "*tanagensis*" (*op. cit.*, p. 233) in having a shorter bill, shorter wing, more rufescent dorsum, and more ochraceous ventral surface. The series available to Oberholser, as well as material collected since that time, has been examined but not even a trend toward the characters described can be noted. The series is, of course, distinct from the Pribilof population, but a sample from anywhere in the Aleutians would have shown the same thing.

The most recently named Aleutian subspecies is "*seguamensis*," which was restricted to Seguam, Amutka, and Yunaska Islands, with intermediates occurring on the Islands of the Four Mountains. It was described, from badly-worn breeding specimens, as being the palest and grayest of the Aleutian races. Reduced barring on the flanks was another supposed character and it was indirectly suggested that the race has a longer culmen than that of "*petrophilus*."

The type series of "*seguamensis*" is rather lighter, on the whole, than the material from the eastern Aleutians. However, the series of "*seguamensis*" is extremely worn and comparable coloration may be found among equally-worn specimens from anywhere in the Aleutians. The tips of the ventral feathers are abraded, resulting in the apparent reduction of barring. As may be seen from Table 1, no significant difference in the length of the bill is evident.

As has been shown, "*tanagensis*" is indistinguishable from "*petrophilus*." This leaves only *kiskensis*, to which all of the birds of the Aleutians, east of the Near Islands, are referred. It is a large race, with only a few of its smallest examples overlapping the largest found on the mainland. It is rather richly colored and reminiscent of *helleri*, although lighter brown dorsally. It most nearly resembles *meligerus*, which is considered below.

The range may be defined as extending from Amak and Amagat Islands, off the western side of the tip of the Alaskan Peninsula, west through the Aleutians to Buldir Island. There are no records from the Alaskan Peninsula or Unimak Island. This may be due to the absence of collectors, since the climate (presumably the limiting factor on the mainland) at the end of the peninsula and on Unimak is probably not markedly different from that slightly farther out on the Aleutians or on Amak and Amagat.

TROGLODYTES TROGLODYTES MELIGERUS (Oberholser)

Anorthura meligera Oberholser, 1900, Auk, 17, p. 25 — Attu Island, Aleutian Islands, Alaska.

T. t. meligerus differs from *kiskensis* in its generally longer wing and tail, and in having more and darker vermiculations on

the flanks. It is a fairly well-defined race.

It has been recorded from the Near Islands (Attu and Agattu Islands).

TROGLODYTES TROGLODYTES ALASCENSIS Baird

Troglodytes alascensis Baird, 1869, Trans. Chicago Acad. Sci., 1, p. 315, pl. 30, fig. 3—Saint George Island, Pribilof Islands, Alaska.

The race differs from *kiskensis* and *meligerus* in being darker dorsally and in having lighter and fewer vermiculations on the flanks. Although the data are scant, it would seem to have a somewhat shorter bill and longer wing and tail than either of these races. With the limited material at hand, the darker dorsal color appears to be the most distinctive character.

It occurs on the Pribilofs, on Saint George, Saint Paul and Otter Islands.

TROGLODYTES AËDON COMPLEX

Many taxonomists (e.g., Chapman and Griscom, 1924; Hellmayr, 1934; Sutton, 1951; Bond, 1956) have noted the close physical and behavioral resemblances between *T. aëdon* of the United States and Canada, *T. brunneicollis* of the mountains of Mexico, and *T. musculus* of Central and South America and the Lesser Antilles. The slight differences between the taxa involve such characters as the amount of barring on the flanks, minor variations in wing-tail proportions, and differences in the general shade of the plumage. The groups replace one another geographically, with only minor discontinuities in their ranges. Because of their allopatric, orderly distribution, they would seem to have arisen as isolates of a common progenitor and later expanded their range to form the present pattern. In spite of their obvious close affinities, there has been reluctance to consider them as racial groups of a common species because evidence of interbreeding or of bridging forms, has been lacking. Recent studies (Marshall, 1956) however, have shown that *aëdon* and *brunneicollis* do interbreed and this evidence, plus previously known facts, does much toward forming a convincing argument for considering *musculus* conspecific with the other groups.

The *brunneicollis* group, consisting of montane forms which range from southernmost Arizona through Oaxaca, may be dis-

tinguished from the *aëdon* group, which occurs from southern Canada to northern Baja California, by its more heavily barred flanks and browner coloration. Ridgway (1904) chose to consider the more pronounced superciliary stripe an additional character, but in reality the stripe is merely accentuated by the darker color of the surrounding plumage. These characters readily differentiate the birds of southern Mexico from the *aëdon* group, but the northern birds are not so distinct, for there is a south to north cline toward lighter color and reduced barring, or in other words an approach toward *aëdon*, until in Sonora, for example, the brown of the ventral surface is restricted to a buffy chest band and the barring of the flanks becomes no heavier than that which is found in extreme examples within the *aëdon* group. The converging of characters is in itself an indication that the groups are not specifically distinct, but convincing proof has been found by Marshall (1956) in southern Arizona, where both types of birds were discovered interbreeding and specimens were collected from a population which is intermediate between the already only slightly differentiated groups. Marshall also noted that the song of the more brownish form does not differ appreciably from that of the *T. a. parkmanii*, the house wren of the western United States. Thus, there can be no doubt that *brunneicollis* should be merged with *aëdon*.

The problem of the relationship between *aëdon* (now including *brunneicollis*) and *musculus* cannot be resolved so simply and conclusively. *T. musculus* is distributed from sea level to high altitudes over much of South and Central America and in the Lesser Antilles. A moderately dark race (*intermedius*) with barred under-tail coverts and faintly marked flanks extends north to Tabasco and to lower elevations in southeastern Oaxaca.¹ *T. a. brunneicollis*, a richly colored, heavily vermiculated form, is found at high elevations in Oaxaca. No indication of intergradation or sympatry between the groups has been noted, but the area is ornithologically poorly known and the evidence must be considered inconclusive.

¹Chapman and Griscom (1924), on the basis of two males from Manuel and Rfo Pilon, included Tamaulipas within the range. The wing-tail ratios of these birds, which I have examined, clearly indicate that they are wintering examples of *parkmanii*. The confusion of the two forms emphasizes their similarity.

Ridgway (1904) distinguished the Middle American forms of *T. musculus* from *T. aëdon* by the difference in the relative lengths of their wings and tails, the tail of *musculus* being less than five-sixths (83 per cent) the length of the wing and that of *aëdon* being five-sixths, or more, the length of the wing. The ratios have been recalculated, using more material than available to Ridgway, and the distinction between the two groups is still maintained (Table 2). But, when the races of *musculus* from South America (which undeniably are representatives of the

TABLE 2

Wing-tail Ratios of Males of the Northern Mainland Races of *T. aëdon*

Race	Character	M	σ_m	Range	N	Ratio
<i>aëdon</i>	wing	51.74 mm.	.29 mm.	49.0—55.0 mm.	25	82.1%
	tail	42.48	.30	39.0—46.5	26	
<i>parkmanii</i>	wing	52.26	.21	49.0—56.0	53	83.8
	tail	43.82	.28	38.0—47.0	48	
<i>intermedius</i>	wing	50.64	.28	43.0—55.0	55	72.7
	tail	36.83	.25	31.0—42.0	53	
<i>inquietus</i>	wing	55.00	.33	53.0—57.5	17	69.8
	tail	38.41	.41	36.5—40.0	17	

Middle American forms) are considered, the clear-cut difference between the two "species" breaks down, although the majority of races are separable. For example, the wing-tail ratios of *musculus*, *bonaire*, and *chilensis* are roughly 84.5, 87.5 and 89.0 per cent; the remaining races range between 69.0 (*albicans*) and 82.0 (*rex*) per cent. When the *brunneicollis* group is included with *aëdon*, the overlap becomes more nearly complete, for these are short-tailed forms with *cahooni*, *brunneicollis*, and *compositus*, for example, having wing-tail ratios of about 75, 78, and 78 per cent respectively. It is evident, therefore, that the wing-tail ratio cannot serve to distinguish the two "species."

The absence of ventral barring is useful in distinguishing about half of the *musculus* groups from *aëdon* but within the remaining forms there is a range from the faintly barred crissum of *musculus* to the fairly heavily barred flanks and under-tail coverts of *inquietus*.

Other characters, such as the dorsal and ventral coloration, might be cited, but none is more useful in distinguishing the groups than those already mentioned. Taken collectively these distinguish each taxon from every other taxon, but no single feature, or assemblage of features, can be found which will fully separate the *aëdon* group from the *musculus* group.

Without a mutually exclusive character, or group of characters, it is difficult to justify considering *musculus* and *aëdon* distinct species. When this fact is coupled with what is known of the similarity in behavior of the two groups (*vide* Chapman and Griscom, 1924, in particular), with the evidence that the groups are allopatric, and with the knowledge that the generally more distinct *brunneicollis* group has been found conspecific with *aëdon*, the case for considering *musculus* and *aëdon* to be conspecific becomes as strong as that which can be made for many polytypic species. Although indisputable evidence of conspecificity is lacking, it seems far better to accept the evidence as it stands than to defer to conservative tradition and the philosophy that no change is better than change based on less than inviolable proof.

Twenty-nine subspecies have been recognized. This is three less than the number recognized by Hellmayr (1934). An additional form (*baldwini*) was described after Hellmayr's synopsis, and this is considered to be a synonym.

T. a. baldwini was described as being darker and grayer than the nominate form, with its breeding range in the central northern United States and adjacent parts of southeastern Canada (Oberholser, 1934). Although a large series was examined, including many of the specimens utilized by the describer, not even a trend toward the ascribed characters could be discerned. It appears that the author failed to take into account the post-mortem color changes usually associated with wrens, as well as the heterogeneity in color found even in fresh material from a given locality. The race is synonymized with *T. a. aëdon*.

The race *intermedius* is now considered to range from southern Mexico through Costa Rica, although Nelson (1901) named *peninsularis* from the tip of the Yucatán Peninsula, and Chapman and Griscom (1924) named *oreopolus* from the highlands of Nicaragua.

Paynter (1955) accepted *peninsularis*, with reluctance, and stated that it could be distinguished from *intermedius* only by its slightly longer bill. An examination of 54 males from throughout the range of *intermedius* shows them to have a mean bill length of $16.16 \pm .08$ mm., with a range from 15.0 to 18.0 mm. Only one specimen, a bird from Costa Rica which approaches *inquietus*, has a bill as long as 18.00 mm.; the remainder fall between 15.0 and 17.0 mm. Six males of *peninsularis* from the type locality at Progreso and from nearby Santa Clara, Yucatán, have a mean culmen length of $16.83 \pm .02$ mm. (not $\pm .20$ mm. as published by Paynter, 1955), and range from 16.5 to 17.0 mm. While the difference between the two samples is "statistically significant," the overlap is much too great to warrant recognition of two races.

Hellmayr (1934) doubted the validity of *oreopolus*, described by Chapman and Griscom (1924) as being a montane race slightly darker than *intermedius*. I cannot recognize the form and consider it to be synonymous with *intermedius*.

T. a. clarus, of the Guianas, Trinidad, northern Brazil, and adjacent parts of Venezuela, Colombia, and Peru, was considered by Chapman and Griscom (1924) to be indistinguishable from *albicans* of southwestern Colombia and western Ecuador. Nevertheless, Hellmayr (1934) chose to recognize the two forms, even though he admitted that individual variation frequently bridged the slight gap he believed to exist. Approximately 50 specimens from the range of each race have been examined and it is concluded with Chapman and Griscom (1924) that *clarus* cannot be separated from *albicans*.

TROGLODYTES SOLSTITIALIS COMPLEX

At high altitudes from southern Mexico through Central and South America, there is a series of isolated populations of short-tailed, short-billed wrens of rich, brown coloration, with broad, tawny superciliaries, tawny auriculars, and pronounced, dark post-ocular stripes. These have been treated as three species. The first is *T. rufociliatus*, a form with four isolated races ranging from Chiapas, Mexico, through El Salvador, which is characterized by heavy barring on the abdomen and under-tail coverts, concealed (or obsolete) small, white spots on upper-tail coverts,

and a few white spots on the wing coverts. The second species is *T. solstitialis* (a group of seven or eight subspecies, most of which are isolated from one another) which is distributed from Costa Rica through the Andes to Venezuela and Argentina. It may be distinguished from *T. rufociliatus* by its less saturated color, lack (or nearly so) of abdominal vermiculation, and absence of spots on both the upper tail and wing coverts. The third species is *T. monticola* a monotypic form isolated near the top of the Sierra Nevada de Santa Marta, Colombia, which is much larger than the other two forms. It resembles *T. solstitialis* in that it is not deeply colored and has no spotting on the rump or wings, and is similar to *T. rufociliatus* in that it is heavily barred below.

Hellmayr (1934) saw no specimens of *rufociliatus*, but thought that it was intermediate between *brunneicollis* and *solstitialis*, and that eventually it might seem advisable to unite the three forms under one species. *T. rufociliatus* and *solstitialis* are morphologically quite distinct from *T. a. brunneicollis*, with only their rich coloration a point in common. In El Salvador *T. a. intermedius* and *rufociliatus* occur sympatrically (Dickey and van Rossem, 1938) and, as it has been shown, *intermedius* is conspecific with *brunneicollis*. Therefore, it is impossible to consider *rufociliatus* to be a member of the *aëdon-brunneicollis-musculus* complex, even if one ignores their morphological distinctiveness. Although *brunneicollis* is not the link between *rufociliatus* and *solstitialis*, the two groups are very similar, with only the presence or absence of abdominal barring a conspicuous difference. Even this difference is bridged, somewhat, by the nominate form of *solstitialis*, since mature specimens occasionally are distinctly, and quite extensively, barred on the flanks. The spotting on the wing and upper-tail coverts of *rufociliatus* is not a good distinguishing character either, because within a given population there are some individuals lacking these markings.

The two groups would seem to have arisen from a progenial population which at some time became divided into two isolated populations and thereupon became somewhat differentiated. Further division and isolation within the groups then gave rise to the various subspecies now recognized. It may be postulated that the primary division occurred during the Cenozoic when

Middle America was divided by various seaways. One population (*solstitialis*) may have been isolated in South America and southern Central America while the other population (*rufociliatus*) was isolated in northern Central America and southern Mexico. Even if the groups did not have their origin precisely in this manner, or at this period, the almost certain fact remains that they arose from a common ancestral stock which became split into two geographically isolated units.

Since the two groups are so slightly differentiated, there is little doubt that their relationship is best expressed by treating them as conspecific forms, uniting them under the older name of *solstitialis*.

T. monticola, the large, heavily barred form of Santa Marta, was believed by Hellmayr (1934) to be reminiscent of *brunneicollis*. He thought it a specialized offshoot of *solstitialis* but a possible link between *solstitialis* and *brunneicollis*. The resemblance between these two forms is superficial. *T. monticola* has the short tail, short bill, and facial pattern of *solstitialis*. Its large size and barred underparts are the only features which are similar to *brunneicollis*, and even the barred underparts are shared by some races of *solstitialis*. While I do not agree that *monticola* is a link between *brunneicollis* and *solstitialis*, I do think that Hellmayr (*op. cit.*) was correct in believing it to be an offshoot of *solstitialis*. The only character which distinguishes it from all of the forms of *solstitialis* is its large size. Being confined to a small area on the top of a mountain, it is analogous to an insular population, in which situation a race often is larger than its congeners. It would seem best to consider *monticola* as merely another race of *solstitialis*.

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